



Hangzhou Tianlong Biotechnology Co., Ltd.

Add: Room 1906, Fengqi Times Tower, No.338, Fengqi East Road, Hangzhou, Zhejiang, China.

MATERIAL SAFETY DATA SHEET

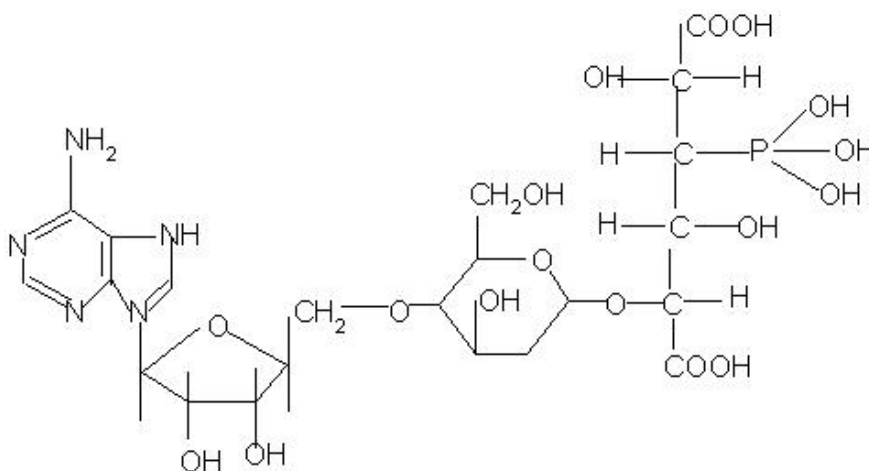
1. Chemical Product and company Identification

Product Name: Bacillus Thuringiensis

Molecular Formula: $C_{22}H_{32}N_5O_{16}P$

Molecular Weight: 625.90

Structural Formula:



Chemical Name: Bacillus thuringiensis

CAS No.: 68038-71-1

Supplier: HANZHOU TIANLONG BIOTECHNOLOGY CO., LTD

Address: Room 1906, Fengqi Times Tower, No.338 Fengqi East Road, Hangzhou, China, 310020

Tel: 0086-571-87214516

Fax: 0086-571-87079476

2. Composition / Information on Ingredients

Composition	CAS No.	Content
Bacillus Thuringiensis	68038-71-1	32000IU/mg
Other ingredients		

3. Hazards Identification

Emergency overview: Product is non-toxic by ingestion, skin contact, or inhalation. May be irritating to skin and eyes, and may be a skin sensitizer.

4. First Aid Measures

Eyes: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Skin: Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Ingestion: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

Inhalation: Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

5. Fire-Fighting Measures

Fire & Explosion Hazards: Non-flammable and no explosive properties.

Extinguishing Media: Use appropriate media for underlying cause of fire. Fire

Fighting Instruction: Wear protective clothing and self-contained breathing apparatus.

6. Accidental Release Measures

Spill or release Procedures: Recover product and place in appropriate container for disposal. Ventilate and wash area.

7. Handling and Storage

Storage: Store in a cool (59-86 F or 15-30 C), dry place.

Special Precaution: Wash thoroughly with soap and water after handling.

Keep impervious gloves on until all potentially contaminated personal protective equipment is removed.

8. Exposure Controls/Personal Protection

Engineering controls: Use local exhaust.

Respiratory protection: Not usually required. If necessary (Mixers/loaders and applicators not in enclosed cabs or aircraft), use a MSHA/NIOSH approved (or equivalent) respirator with a dust/mist filter (N-95, R-95, or P95).

Skin protection: Impervious, waterproof gloves and clothing to minimize skin contact.

Eye protection: Not usually required. If necessary, use safety glasses or goggles.

Other protection: Wash thoroughly with soap and water after handling.

9. Physical and Chemical Properties

Form: Solid

Color: Yellow brown

Odor: Typical fermentation (malt) odor

Boiling point: Approx. 100°C

Melting point: Approx. 0°C

Vapor pressure (mm Hg): N/D

Vapor Density (Air=1): N/D
Evaporation Rate: N/D
Bulk Density: 1.06-1.1 g/mL
Solubility: Disperses well in water
pH: 4.6-5.0
Viscosity: 250-1000 cps at 25°C

10. Stability and Reactivity

Chemical Stability: Stable.

Incapability: Diluted or undiluted product can cause corrosion if left in prolonged contact with aluminum surfaces (e.g. spray equipment, aircraft components).

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Acute Toxicity

Oral LD50: > 5,000 mg/kg (rat)

Dermal LD50: > 5,000 mg/kg (rabbit)

Inhalation LC50: > 5.34 mg/l (rat)

Reproductive effects: There is no indication that B.t. causes reproductive effects.

Teratogenic effects: There is no evidence indicating that formulated B.t. can cause birth defects in mammals.

Mutagenic effects: *B. thuringiensis* appears to have mutagenic potential in plant tissue. Thus, extensive use of B.t. on food plants might be hazardous to these crops. There is no evidence of mutagenicity in mammalian species.

Carcinogenic effects: Tumor-producing effects were not seen in 2-year chronic studies during which rats were given dietary doses of 8400 mg/kg/day of B.t. formulation. It is unlikely that B.t. is carcinogenic.

Organ toxicity: There is no evidence of chronic B.t. toxicity in dogs, guinea pigs, rats, humans, or other test animals.

12. Ecological Information

Effects on birds: B.t. is not toxic to birds. The LD50 in bobwhite quail is greater than 10,000 mg/kg. When autopsies were performed on these birds, no pathology was attributed to B.t. Field observations of 74 bird species did not reveal any population changes after aerial spraying of B.t. formulation.

Effects on aquatic organisms: B.t. is practically nontoxic to fish. Rainbow trout and bluegills exposed for 96 hours to B.t. at concentrations of 560 and

1000 mg/L did not show adverse effects. A small marine fish (*Anguilla anguilla*) was not negatively affected by exposure to 1000 to 2000 times the level of B.t. expected during spray programs. Field observations of populations of brook trout, common white suckers, and smallmouth bass did not reveal adverse effects 1 month after aerial application of B.t. formulation. However, shrimp and mussels may be affected adversely.

Effects on other organisms: Applications of formulated B.t. are not toxic to most beneficial or predator insects. Treatment of honeycombs with B.t. var. *aizawai* does not have a detrimental effect upon bees, nor on the honey produced. Very high concentrations (108 spores/ ml sucrose syrup) of B.t. var. *tenebrionis*, which is used against beetles such as the Colorado potato beetle, reduced longevity of honey bee adults but did not cause disease. B.t. applied at rates used for mosquito control may cause the death of some non-target species. Users of B.t. are encouraged to consult local officials or the nearest EPA regional office responsible for protecting endangered species before using B.t. products in counties where susceptible endangered species of Lepidoptera are known to be present. It did not have negative effects on frogs and salamanders.

13. Disposal Considerations

Waste Disposal Methods: Dispose of product in accordance with federal, state, and local regulations.

14. Transport Information

Not applicable

15. Regulatory Information

Not applicable

16. Other Information

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.